

SIDEWALK SPECIFICATIONS
C700

Rochester, MN

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Section 1 GENERAL REQUIREMENTS

C700.101 Description

These specifications shall apply to the construction and restoration of sidewalks installed for improvement of pedestrian facilities. The work includes the construction of concrete walk and other related items as specified

Use of the term "Plans, Specifications and Special Provisions" within this specification shall be construed to mean those documents, which compliment, modify, or clarify these specifications and are accepted as an enforceable component of the Contract or Contract Documents.

C700.102 Reference Documentation

All references to Mn/DOT Specifications shall mean the latest published edition of the Minnesota Department of Transportation Standard Specifications for Construction as modified by any Mn/DOT Supplemental Specifications issued before the date of advertisement for bids. All references to other Specifications of AASHTO, ASTM, ANSI, etc. shall mean the latest published edition available on the date of advertisement for bids.

Section 2 MATERIALS

C700.201 Concrete

Concrete shall meet the requirements of the current Minnesota Department of Transportation Standard Specifications for Highway Construction, subject to the following specific requirements and limitations:

A. Mix Requirements

1. Concrete: Mn/DOT Mix No.3A32
2. Air-entrained with air content of 5% to 8%.
3. Compressive strength of 3900 psi.
4. Fly ash may be substituted for Portland cement up to but not to exceed 15% of the cement content.
5. For High Early strength concrete use Mix No. 3A32 with 30% additional cement.
6. No other admixtures will be permitted without specific approval for the specific project by the City Engineer.
7. Concrete work constructed using concrete that fails to comply with any of these requirements shall be removed and reconstructed.

A batch ticket signifying the concrete mix design and the presence of any admixtures shall accompany each load of ready-mixed concrete. These tickets shall accompany the ready-mix truck driver. The ticket shall be available on the site to the representative of the Public Works Department. The Public Works representative shall take the ticket of any concrete not in compliance with the concrete specified in C700.2A1 and any non-compliant concrete shall be removed and replaced.

C700.202 Material Tests

Ready-mix concrete supplier shall submit to the City no later than May 1, an approved concrete mix design in accordance with Mn/DOT standard procedures with the following minimum schedule or frequency:

1. At least once annually for each mix.
2. At least once annually for each aggregate material stockpile from each aggregate source.
3. At least once annually for each Portland cement source.
4. Compressive Strength Test Cylinders
 - a) The City may take one three-cylinder test set of any concrete used for public sidewalks.
 - b) One cylinder of each set will be tested at 7 day and a second cylinder will be tested at 28 days. The third cylinder will be tested only if the 28-day test fails to meet specified strength.
 - c) All concrete sampling and testing will be done in accordance with the procedures described in the Minnesota Department of Transportation Concrete Manual. A certified lab will conduct cylinder compressive tests.
 - d) Should the test set fail:
 - (1) The Contractor, at its expense, shall have the right to challenge the test results by having the in place concrete tested by an independent, certified lab using a testing method approved by the City Engineer.
 - (2) Concrete sidewalk for which the tests fail shall be removed and replaced at the Contractor's expense.
 - (3) The frequency of city testing will be increased for that Contractor.

- (4) Repeated failures will be grounds for suspension or revocation of the Contractor's license.
- 5. Membrane Curing Compound shall meet the requirements of Mn/DOT Specification Section 3754 with white pigment.

Section 3 CONSTRUCTION REQUIREMENTS

C700.301 Public Utilities

The Contractor shall be responsible to protect any existing utility from damage caused by or occurring during their operations. If the work requires excavation, the Contractor shall notify utility owners by requesting on site utility locations using the state 'Gopher One-call' system.

The locations of underground facilities shown on the plans are approximate only, and are shown only for the Contractor's general information. The engineer does not assume responsibility for showing all utilities on the plans. The Contractor shall notify all public and private utilities of their work schedule, and use suitable precautions to prevent damage to pipes, conduits, and other underground or overhead structures.

C700.302 Notice to Property Owner and Removals

The Contractor shall notify each abutting property owner at least 3 days, but not more than 5 days in advance of starting work at each location. A copy of the notice form to the Property Owner is available at the Public Works Department.

After the notice time has expired, the Contractor shall begin the work by removing any old concrete, brick, flagstone, bushes, and other items within the sidewalk area including one foot each side of the sidewalk. Should the proposed sidewalk be located closer than one foot from the property line, the limit of the removal shall be the property line. Trees shall not be removed except upon specific request of the owner of said tree. Items removed shall be disposed of by the Contractor off the site in a manner acceptable to the Public Works Department and the owner of the disposal site.

C700.303 Limits of Excavation and Restoration

Excavation depth shall be the thickness of the new sidewalk plus aggregate, tapered at no less than 1 to 1 slope upward and outward. Loose and loosely compacted materials shall be removed. Disturbed areas outside the construction limits shall be replaced in kind at the Contractor's expense.

1. Turf Areas - The Contractor shall limit the removal and excavation width to 12" (inches) on each side of the sidewalk. After completion of the sidewalk, excavated areas adjacent to the sidewalk shall be regrading to match existing lawn and/or paved areas and backfilled with topsoil to an elevation that will leave the top of the sod placed approximately 1" (inch) below the top of the sidewalk.
2. Aggregate Driveways - The Contractor shall limit the removal and excavation width to 12" (inches) on each side of the sidewalk. After completion of the sidewalk, excavated areas adjacent to the sidewalk shall be backfilled with substantially the same type of aggregate materials as those in the existing driveway.
3. Bituminous Driveways - The Contractor shall limit the excavation to a distance of 2' (feet) from the sidewalk. The existing bituminous shall be saw cut or Colter cut in a straight line parallel with the edge the sidewalk and at a distance of not less than 2' (feet) from the sidewalk. After completion of the sidewalk, excavated areas adjacent to the sidewalk shall be replaced with not less than 6" (inches) Class 2 Aggregate Base. Aggregate Base shall be uniformly graded to allow the placement of bituminous material at a thickness equal to the existing bituminous but not less than 3" (inches).
4. Concrete Driveways - The Contractor shall limit the removal and excavation only to the edge of the sidewalk segments being replaced. Excavation depth shall be to the base of the existing concrete driveway, then tapered at 1 to 1 slope to a depth of 12" (inches). Loose and loosely compacted materials shall be removed. Undermining of existing concrete driveway shall be repaired before placing aggregate base for the sidewalk. Concrete driveway undermining shall be

repaired using premixed concrete (Sackrete or equal) and water. Packing sand or gravel into the void shall not be permitted. The mixture shall be packed into the void and shaped with a vertical face. Mixture shall not extend under the new sidewalk. After the undermine repair has been completed, the aggregate base under the sidewalk may be placed. If abutting driveway concrete is damaged during the sidewalk removal, excavation, or any other portion of the work, the Contractor shall remove and replace the entire damaged concrete driveway panel. Partial panel removal shall not be permitted. If the damaged driveway does not have clear jointing pattern, the Contractor shall saw cut the driveway in a line parallel to the new sidewalk at a distance from the new sidewalk that will fully remove the first "crack" that approximately parallels the sidewalk. The driveway between the sidewalk and the saw cut shall be removed and replaced at the same thickness as the existing concrete driveway but not less than the thickness of the new sidewalk.

Should the proposed sidewalk be located closer than one foot from the property line, the limit of the removal shall be the property line.

At any time the work requires removal of any portion of an existing driveway or sidewalk located on private property, the property owner shall be fully informed before the removal begins. The property owner shall be advised as to the nature of any damage caused to their property and as to the extent and type of repairs planned. If the repairs are the direct or indirect result of the Contractor's work, the repairs will be completed at the Contractor's expense.

C700.304 Tree Roots

In areas where tree roots are encountered within the zone described in the Limits of Excavation and Restoration, the roots shall be cleanly cut with a saw at the edge or bottom of the excavation and removed. No construction method, which disturbs the roots outside of this zone, shall be permitted.

Tree root removal and disposal shall be incidental to other work items.

C700.305 Width and Thickness

Concrete walks in R -1 & R -2 residential areas shall be a minimum thickness of 4" (inches). Walks shall be 4' (feet) wide along residential streets with a total right of way width of 56' (feet) or less. Streets with a total right of way width of more than 56' (feet) shall be 5' (feet) wide, unless otherwise designated by the City Engineer or shown on the Plans.

Walks in the Central Business District, commercial, industrial, and multiple dwelling zones of R-3 & R-4 or walks in areas of commercial, industrial, and R-3 and R-4 use shall have a minimum thickness of 5" (inches). Walks in areas of commercial, industrial, and R-3 and R-4 shall be a minimum 5' (feet) wide, unless otherwise designated by the City Engineer or shown on the Plans.

Walks across vehicular entrances (existing or future) shall conform to the following minimum thickness requirements:

1. 6" (inches) for single dwelling entrances in R -1 & R -2;
2. 7" (inches) for the Central Business District, commercial, industrial, multiple dwelling entrances and alleys.

The driveway apron between the sidewalk and the street pavement or concrete curb shall be constructed in accordance with the Standard Plates.

C700.306 Preparation of Foundation Base

The soil under the proposed walk shall be excavated or filled to bring it to "foundation level". Foundation level shall be 1" below the bottom of the concrete walk, and 4" below in driveway entrances.

Sod, vegetable material, topsoil and frozen soil shall be removed from the area below the proposed walk. Wherever wet, spongy, soft, or unstable material is encountered below the foundation level, such material shall be excavated to a depth directed by the City Engineer. These over-excavations shall be backfilled with uniform select material and compacted to 100% Standard Proctor Density

Backfill shall be made of a uniform select material provided by the Contractor, placed in layers not exceeding 4" (inches) thick and compacted to 100% Standard Proctor Density. Backfill may be clay or granular materials. Clay material shall have a moisture content within 2% of optimum. Granular materials shall have a moisture content of at least 80% of optimum.

Embankment and soil fill, other than those soils used to replace unsuitable material, shall include the area from 12" (inches) either side of the proposed walk and sloping downward and outward at a 1 to 1 slope. Fill shall be made of a uniform select material provided by the Contractor, placed in layers not exceeding 6" (inches) thick and compacted to 100% Standard Proctor Density. Fill may be clay or granular materials. Clay material shall have a moisture content within 2% of optimum. Granular materials shall have a moisture content of at least 80% of optimum.

The surface shall be graded to within 3/8" (inch) of the specified elevation.

C700.307 Forms and Grades

Forms shall be not smaller than commercial 2x4 lumber for 4" (inch) walks, 2x6 for 5" (inch) and 6" (inch) walks, and 2x8 for 7" (inch) walks and shall be sufficiently rigid to withstand the operations of placing and finishing the concrete.

Good quality commercial 2" (inch) lumber or rigid steel forms shall be used except that flexible strips properly staked may be used on curves. Sections of straight forms 10' (feet) long or shorter may be used for curves having a radius of 300' (feet) or more. Lumber face against which the concrete is placed shall be free of knot holes, large chips or similar imperfections.

The top of the form shall be set true to line and grade. Unless otherwise noted in the Plans, Detail Plates, or Special Provisions, or directed by the City Engineer, the forms shall be set so that the completed walk will slope 1/4" (inch) per foot toward the street. Forms shall be securely staked and braced to hold their alignment during construction of the walk to within 1/8" (inch) of the specified line and grade.

All forms must be clean before using and shall be oiled with a light, clear, commercial paraffin form oil before concrete is placed.

Forms shall remain in place for a period of not less than 24 hours after placement of the concrete. Special care shall be taken when removing forms to avoid damage to the edges and the surface of the new concrete. The practice of using temporary forms or headers that are removed while the concrete is plastic shall be permitted, however the outside forms shall remain in place for not less than 24 hours.

C700.308 Joints

Walks shall be divided into panels by expansion and contraction joints. Joints shall be spaced at approximately 5' (foot) intervals. Wherever practicable, joints shall align with like joints in adjoining work. No panel shall have an area exceeding 40 square feet.

Joints shall be parallel with or perpendicular to the centerline of the walk. Jointing layout shall avoid angles of less than 75 degrees. Panel widths of less than 3 feet or more than 7 feet shall not be permitted. The length to width ratio for panels shall not exceed 1 to 1.5.

Contraction joints shall be saw cut not more than 3/16" (inch) in width and shall be cut to a depth of at least 1/3 the thickness of the walk.

Expansion joints shall be 1/2" (inch) wide unless otherwise specified, shall be the full thickness of the walk, and shall be of pre-formed expansion joint material. Expansion material secured in a manner that will prevent movement or displacement during the placement of the concrete.

Expansion joints shall be placed in the following locations:

1. Along any abutting masonry.
2. Along the foundation of any building.
3. Along concrete curb.
4. All around the intersection of two public walks.
5. Around any concrete base or structure
6. Along both sides of abutting concrete driveways.
7. At intervals not exceeding 100' (feet) and at all property lines known or indicated on the Plans.
8. As directed by the City Engineer.

Sawing of joints shall be conducted as soon as the condition of the concrete permits and before any random cracking occurs.

C700.309 Posts and Utility Boxes

Posts for parking meters, street signs, or other installations shall be surrounded with a 1/4" (inch) or thicker sleeve. Future post locations shall also be provided with sleeves. Sleeves shall be the full thickness of the sidewalk concrete shall be prevented from going under, through or to the inside of the sleeve.

Curb stops located in the sidewalk shall be set in the sidewalk in accordance with City Standard Plates.

All curb stops, valve boxes, frames, or covers within the limits of a concrete walk shall be raised or lowered as required, and be adjusted flush with the finished surface of the walk.

C700.310 Placing Concrete

Concrete shall be placed in accordance with the requirements of Mn/DOT Section 2521, subject to the following specific requirements:

1. At least 3 working hours notice shall be given the Engineer to provide for the inspection and of the base and forms before any concrete is placed. The Contractor before placing concrete as the Engineer prescribes shall complete corrections and adjustments to the base, forms, and other installations.
2. Immediately before the concrete is placed the base shall be moistened.
3. Concrete shall not be placed on a frozen material. Concrete shall not be placed when the air temperature is less than 35 degrees Fahrenheit nor shall it be placed when the air temperature is less than 40 degrees Fahrenheit and falling. Concrete placed whenever the predicted low temperature is less than 45 degrees Fahrenheit, cold weather protection shall be placed in accordance with Mn/DOT specifications. Cold weather protection shall continue for not less than 7 days.

4. The concrete placed shall be vibrated to remove voids and struck off to the required grade then floated smooth.

C700.311 Finishing

The surface of the sidewalk shall be trowel led to a dense and closed, but not glossy, finish. The edges of the walk shall be tooled with an approved edging tool in a manner that leaves a neat and smooth border.

Except for pedestrian ramps and other exposed aggregate areas, the surface shall be finished with a light brush finish using only tools approved by the City Engineer. Brushing shall be uniform and transverse at right angles to the centerline of the walk and shall be sufficient to eliminate any marks left by prior operations.

The surface shall not vary more than 1/8" (inch) from the elevation or the alignment specified. Joints shall not vary more than 1/4" (inch) from the prescribed alignment.

C700.312 Pedestrian Ramps

Pedestrian ramps shall be constructed in accordance with the City's Standard Plate. Grades shall not exceed the maximum grades shown on the Standard Plate.

C700.313 Central Business District and Boulevard Walk

Within the Central Business District, walks shall be placed abutting the street curb. Walk may not be installed abutting the curb in any other area, except with specific authorization by the City Engineer.

Walks within the Central Business District and walks placed abutting the street curb shall have special decorative pattern in accordance with City Standard Plate or as specifically approved by the City Engineer.

C700.314 Marking of Work

Contractors shall mark the new sidewalk using a suitable stamp. Stamp shall include the Contractor's name and the year in which the work was completed

One stamp marking shall be required in each of the following locations:

1. At each property line.
2. At a maximum of 100' (foot) intervals along the entire length of walk constructed.
3. On each separate area or section for lengths less than listed above, such as repair work, crosswalks, and partial frontage construction.
4. As directed by the City Engineer.

C700.315 Curing

Concrete shall be cured in accordance with the requirements of Mn/DOT Section 2521 as modified herein. Membrane Curing Compound meeting the requirements of Mn/DOT Specification Section 3754 with white pigment shall be applied. Application rate shall be adequately dense to visual cover the gray concrete with white pigment.

Plastic sheets shall only be used as protection from rain or as a portion of cold weather protection.

Cold weather protection shall continue for not less than least 7 days after casting. Straw, hay and similar loose materials shall not be used as cold weather protection.

C700.316 Backfill and Clean-up

After removal of the forms, all debris, excess material, tools and equipment shall be removed from the site within 48 hours.

In turf areas, approved topsoil material shall be placed against the sides of the walk to a minimum depth of 6" (inches) or the full excavation depth, whichever is less. The area shall be fine graded and all rocks of 1/2" (inch) diameter or larger shall be removed. The surface of the topsoil shall be firm, smooth, and uniformly graded. Topsoil shall be graded so that the surface of the sod is approximately 1" (inch) below the abutting sidewalk and the adjacent paved areas to allow for swelling of the sod grass root zone.

Turf areas outside the areas defined in the Limits of Excavation and Restoration shall be sodded at the Contractor's expense.

Turf areas within the areas defined in the Limits of Excavation and Restoration shall be sodded by the Contractor, unless otherwise specified in the special conditions for the Work.

Adjacent concrete walks and driveways, bituminous driveways, gutter lines and street areas shall be swept and left clean and free of debris.

The cost of backfilling and cleanup shall be incidental to the Work.

Section 4 METHOD OF MEASUREMENT

C700.401 Concrete Walk

Concrete Walk shall be measured by area computation – Each uniform thickness will be measured separately by top surface area.

C700.402 Pedestrian Curb Ramp

Pedestrian Curb Ramp shall be measured by physical count (each). They shall include all materials, equipment and labor needed construct the pedestrian ramp, as shown in the Plans.

Section 5 BASIS OF PAYMENT

C700.501 Description

Payment for pedestrian facility items at the Contract prices of each design shall be compensation in full for all costs of providing a complete-in-place pathway, including excavation, foundation preparation, backfilling, finishing, restoration of surface improvements, disposal of surplus or waste materials, final cleanup, and such other work as may be specified, but excluding the construction or materials, specifically designated for payment under other Contract Items.

C700.502 Items List

Concrete walk construction will be paid for on the basis of the following schedule:

ITEM NO	ITEM	UNIT
C700.501	__IN CONCRETE WALK REPLACEMENT	SQ FT
C700.501	__IN CONCRETE WALK REPLACEMENT	SQ YD
C700.501	__IN CONCRETE WALK REPLACEMENT	LIN FT
C700.502	PEDESTRIAN CURB RAMP	EACH
C700.502	PEDESTRIAN CURB RAMP	SQ FT
C700.502	PEDESTRIAN CURB RAMP	SQ YD
C700.503	TRUNCATED DOMES	SQ FT
C700.504	DRILL & GROUT #13 REBAR __IN LONG	EACH
C700.505	REPLACE CONCRETE CURB & GUTTER	LIN FT
C700.505	REPLACE CONCRETE CURB	LIN FT
C700.506	CONCRETE SAWING	LIN FT